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# Rubiacearum Americanarum Magna Hama Pars VIII. New species of *Gonzalagunia* and *Sabicea* from Mesoamerica and Colombia

Charlotte M. Taylor

Missouri Botanical Garden, P.O. Box 299, St. Louis, Missouri 63166, U.S.A.  
charlotte.taylor@mobot.org

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**ABSTRACT.** The new species *Gonzalagunia osaensis* C. M. Taylor, found from central Panama to eastern Costa Rica, is described and illustrated; it has previously been confused with *G. rudis* (Standley) Standley. The new species *Sabicea chocoana* C. M. Taylor, found from eastern Panama to western Colombia, is also described and illustrated; it has previously been confused with *S. panamensis* Wernham.

**Key words:** Colombia, *Gonzalagunia*, Mesoamerica, Rubiaceae, *Sabicea*.

The new species of *Gonzalagunia* Ruiz & Pavón and *Sabicea* Aublet described below were discovered during preparation of the Rubiaceae treatment for the *Flora Mesoamericana*.

*Gonzalagunia* (Isertieae; Robbrecht, 1993) comprises about 35 (Ståhl, 1999) neotropical species distributed from central Mexico and the Antilles to Bolivia and southern Brazil. This genus is characterized by its usually shrubby habit; its triangular interpetiolar stipules that are frequently persistent; its terminal, spiciform, bracteate inflorescences with the flowers borne singly or in congested cymes directly from the well-developed primary axis; its calyx lobes four; its salverform pink or white corollas with the lobes four and imbricated (or reportedly infrequently valvate: Ståhl, 1999); and its fleshy fruits with the numerous small angled seeds borne loose and dry inside two or four bony pyrenes. The long slender inflorescences and infructescences are often pendulous, giving the plants a distinctive aspect. The flowers are generally fragrant and distylous. The fruits at maturity are typically mealy or spongy rather than juicy. The number of pyrenes in the fully developed fruits, two vs. four, has been considered taxonomically informative (e.g., Ståhl, 1999). Species of *Gonzalagunia* are commonly found in secondary vegetation and produce flowers and fruits for relatively long periods, and are therefore commonly collected. The genus has not been studied comprehensively.

*Sabicea* comprises about 120–130 neotropical and African species (Andersson, 1999). This genus

has often been included in the tribe Isertieae (e.g., Robbrecht, 1993), although it has also been treated in the tribe Sabiceae when this is separated from Isertieae (Bremer & Thulin, 1998). In the Neotropics *Sabicea* is distributed from central Mexico and the Antilles to Bolivia and southern Brazil. This genus is characterized in the Neotropics by its usually twining habit; its interpetiolar stipules that are usually ovate to elliptic, persistent, and reflexed; its axillary, bracteate, capitate to cymose inflorescences; its calyx lobes five; its salverform to funnelform, usually white corollas with five valvate lobes; its stigmas and ovary locules five; and its fleshy fruits with numerous small angled seeds distributed through the pulp. The fruits are juicy and usually pass through pink and red stages to finally become red-purple to violet-black at maturity. Species of *Sabicea* are commonly found in secondary vegetation, and produce flowers and fruits often and for relatively long periods. Some South American species are low pyrrhophytes in savanna and cerrado vegetation (e.g., *S. brasiliensis* Wernham, *S. humilis* S. Moore), and a few apparently may grow as self-supporting shrubs (e.g., *S. camporum* Sprague). Many species of *Sabicea* bear white or tan arachnoid pubescence; the presence and distribution of this pubescence on the plant has been considered taxonomically informative (e.g., Steyermark, 1967) although its variation in living populations has apparently not been studied. *Sabicea* was monographed by Wernham (1914), but this work is now outdated.

***Gonzalagunia osaensis*** C. M. Taylor, sp. nov.

TYPE: Costa Rica. Puntarenas: Reserva Forestal Golfo Dulce, Aguabuena, Rincón de Osa, 8°42'N, 83°32'W, 50–150 m, 10 Aug. 1991, R. Aguilar 259 (holotype, CR; isotype, MO-4234234). Figure 1C, D.

Haec species a *Gonzalagunia dicocca* lobulis calycinis linearis 1.5–3 mm longis atque lobulis corollinis acutis 3.5–6 mm longis distinguitur.

Shrubs or small trees to 4 m tall, with branches often slender and arching; stems densely strigillose.



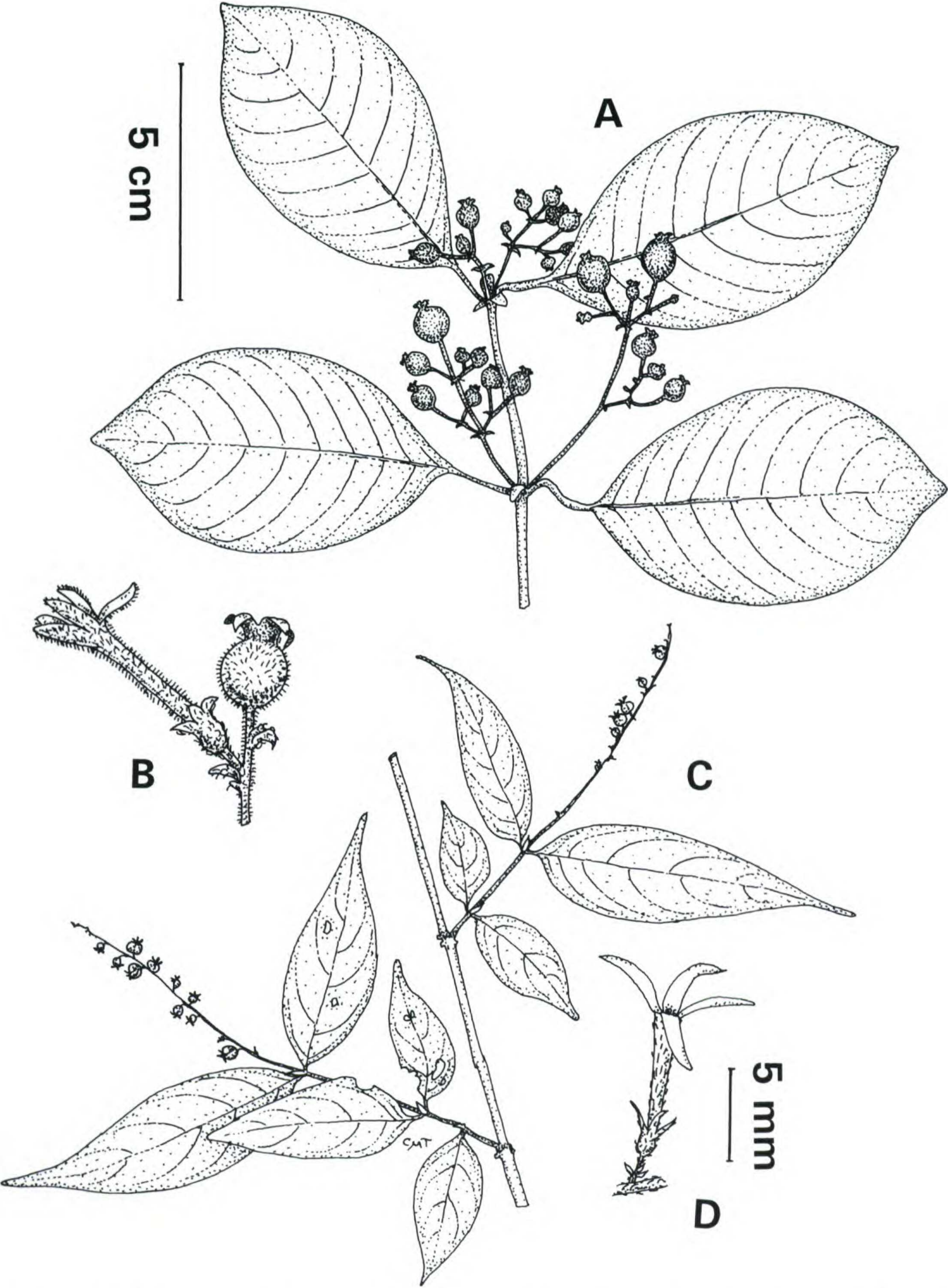


Figure 1. A, B, *Sabicea chocoana* C. M. Taylor. —A. Flowering branch; based on *León* 516. —B. Detail of inflorescence showing flower and young fruit; based on *Gentry & Aguirre* 15236. C, D, *Gonzalagunia osaensis* C. M. Taylor. —C. Flowering branch; based on *Cuadros* 8050. —D. Flower; based on *Grayum* 8634. A, C to 5-cm scale; B, D to 5-mm scale.



*Leaves* lanceolate,  $3\text{--}10 \times 1\text{--}2.5$  cm, at apex tapered and acuminate, at base cuneate to obtuse, drying papyraceous, adaxially sparsely strigillose to glabrescent on lamina and densely strigillose on costa and secondary veins, abaxially sparsely to moderately strigillose at least on veins; secondary veins 4 to 6 pairs, usually at least weakly looping to interconnect, adaxially costa thinly prominulous and remaining venation plane or secondary veins sometimes a little thickened, abaxially costa and secondary veins prominulous and remaining venation plane, without domatia; *petioles* 1–4 mm long, densely strigillose; *stipules* interpetiolar, narrowly triangular to subulate, 3.5–7 mm long, long-acute, persistent, adaxially densely strigillose, abaxially densely strigillose on basal part and midrib and glabrescent on margins of upper part. *Inflorescences* terminal on rather short lateral branches (i.e., these with 1 to 2 or occasionally up to 4 leaf-bearing nodes), densely strigillose, arching to pendulous, spiciform with primary axis prolonged and flowers borne singly directly from it; peduncles 0.5–1 cm long, slender; flowering portion  $2.5\text{--}8 \times 1$  cm; bracts narrowly triangular to linear, 1–4 mm long, acute, borne in clusters of 2 to 3 at bases of pedicels or sometimes 1 to 2 bracts basal to pedicel and 1 to 2 bracts borne along its length; pedicels 1–1.8 mm long; *flowers* distylous; hypanthium ellipsoid, ca. 1 mm long, densely strigillose; *calyx limb* 1.8–2 mm long, densely strigillose, lobed for  $2/3\text{--}3/4$ , lobes 4, linear, sometimes somewhat unequal (i.e., with less than 30% difference in length); *corolla* salverform, white, externally densely sericeous to strigillose, internally glabrous except puberulous to hirtellous on bases of lobes, tube 7–9 mm long, lobes 4, narrowly triangular, 3.5–6 mm long, acute; *anthers* subsessile, narrowly oblong, included, in short-styled form ca. 1.5 mm long and situated ca.  $2/3$  of length of corolla tube above its base, in long-styled form ca. 1.2 mm long and situated just below middle of corolla tube; *stigmas* 2, linear, in short-styled form situated ca.  $1/3$  of length of corolla tube above its base and included, in long-styled form ca. 1.2 mm long and situated in corolla throat, included or with tips exerted. *Fruits* when dry ellipsoid, ca.  $3 \times 3.5$  mm, laterally flattened, somewhat didymous, strigillose, white, at maturity quickly becoming inflated; pyrenes 2, subglobose.

*Habitat, distribution, and phenology.* In wet forest at 0–650 m, southeastern Costa Rica to western Panama; collected in flower May through October, in fruit August through February.

This new species is distinguished by its rather low slender habit, its relatively small lanceolate

leaves, its rather short inflorescences with the flowers borne directly and singly from the primary axis, its linear calyx lobes 1.5–3 mm long, its acute corolla lobes 3.5–6 mm long, and its fruits with 2 pyrenes. The species epithet refers to its geographic distribution. This new species is similar to *Gonzalagunia dicocca* Chamisso & Schlechtendal, found in northern to central South America, in general aspect and in its fruits with 2 pyrenes; but *G. dicocca* differs from *G. osaensis* in its calyx lobes 0.2–1 mm long and its corolla lobes 3–3.5 mm long. *Gonzalagunia osaensis* has also been previously confused with *G. rudis* (Standley) Standley (Dwyer, 1980; Burger & Taylor, 1993), but *G. rudis* differs from *G. osaensis* in its habitat, in usually seasonal or moist forest; its densely sericeous hypanthium; its corollas with tubes ca. 3.5 mm long and lobes ca. 1.5 mm long; and its fruits with 4 pyrenes. *Gonzalagunia osaensis* appears to be locally common, particularly in the Osa and Burica Peninsulas, and seasonal in its flowering and fruiting.

*Paratypes.* COSTA RICA. **Puntarenas:** cantón de Osa, Reserva Forestal Golfo Dulce, *Aguilar* 1216 (INB, MO); cantón de Osa, Parque Nacional Corcovado, Península de Osa, Estación San Pedrillo, *Aguilar* 2350 (MO); cantón de Golfito, Parque Nacional Corcovado, Península de Osa, Estación Sirena, *Aguilar* 2450 (INB, MO), *Aguilar et al.* 3539 (INB, MO); cantón de Golfito, Península de Osa, El Tigre, cabecera del Río Agujas, Finca Azofeifa, *Aguilar* 2654 (INB, MO); cantón de Osa, Rincón de Osa, fila Casa Loma, sendero Las Ranas, *A. Chacón* 911 (CR, MO); ridge between Quebrada Aguabuena and Quebrada Banegas, ca. 5 km W of Rincón de Osa, *Grayum* 4055 (MO); ridge between Quebrada Banegas and Río Riyito, ca. 7 km W of Rincón de Osa, *Grayum* 4092 (MO); Reserva Forestal Golfo Dulce, Osa Península, Rancho Quemado, ca. 15 km W of Rincón, *Hammel et al.* 16814 (CR, MO), *Hammel et al.* 17003 (CR, MO); cantón de Osa, Reserva Forestal Golfo Dulce, Península de Osa, Playa Campanario o San Josecito, Sierpe, *Harmon* 296 (INB, MO); 12 km E of Golfito, *Harmon & Fuentes* 6180 (MO); E of Sirena headquarters, Corcovado National Park, *Hartshorn* 1866 (MO); cantón de Osa, Rancho Quemado, Sierpe, cabeceras del Río Drake, *G. Herrera* 4226 (CR, MO); Corcovado National Park, Osa Peninsula, near Park headquarters at Sirena, *Janzen* 11031 (MO); Parque Nacional Corcovado, upper Camaronal, *Kernan & Phillips* 595 (MO), Ollas trail, *Kernan et al.* 875 (CR, MO); ridge N of airport, Rincón de Osa, *Liesner* 1960 (MO); Corcovado National Park, 0–2 km W of park headquarters at Sirena, *Liesner* 2914 (MO); cantón de Osa, Reserva Forestal Golfo Dulce, Península de Osa, Rincón de Osa, *Lobo* 79 (INB, MO); cantón de Osa, Reserva Forestal Golfo Dulce, Rancho Quemado, Fila Guerra, Rincón, Finca G. Padilla, *A. L. Marín & Gutiérrez* 56 (INB, MO); cantón de Osa, Rancho Quemado, Fila División, *J. Marín* 24 (CR, MO); cantón de Osa, tierras del Grupo de Conservación de Rancho Quemado, Sierpe, *J. Marín* 221 (INB, MO); cantón de Osa, Agua Buena, Rincón [de Osa], al N de BOSCOA, *Morales* 113 (CR, MO); cantón de Osa, camino a la toma de agua, Rancho Quemado, Rincón [de Osa], *Quesada*



244 (INB, MO); Cantón de Osa, Reserva Forestal Golfo Dulce, Península de Osa, Rancho Quemado, Quebrada El Brote, *Quesada & Segura* 762 (INB, MO); along camino de Altura, 2–5 mi. W of Rincón [de Osa], trail to airfield from Mile 4, *Raven* 21669 (MO); Parque Nacional Corcovado, Estación Sirena, *Saborío* 80 (INB, MO); La Gamba, Parque Nacional Espinas, *Will* 26/07/99/71 (MO); Refugio de Fauna Silvestre Gofito, *Zamora* 1056 (CR, MO); Reserva Nacional de Vida Silvestre Gofito, Fila Gamba, camino entre Gofito y Villa Briceño, *Zamora et al.* 1916 (INB, MO). **Puntarenas–San José Border:** Tarrazú, faldas del Cerro Nara, ca. Esquipulas, límite Quepos y Tarrazú, *Gómez-Laurito et al.* 11579 (CR, MO). **San José:** Zona Protectora La Cangreja, along Quebrada Grande and on adjacent ridges, ca. 2 km NNE of Mastatal de Puriscal, *Grayum* 8634 (CR, MO). PANAMA. **Chiriquí:** Burica Peninsula, San Bartolo límite, 21 km WNW of Puerto Armuelles, *Busey* 459 (MO); Burica Peninsula, Quebrada Mérida, 4 mi. S of Puerto Armuelles, *Liesner* 379 (MO). **Herrera:** above Chepo de Las Minas, *Folsom et al.* 6980 (MO); distrito de Las Minas, Chepo, *Galdames et al.* 1658 (MO); between Las Minas and el Toro, near village of Chepo, *McPherson* 10302 (MO). **Los Santos:** vicinity of headwaters of Río Pedregal, 25 mi. SW of Tonosí, *Lewis et al.* 2922 (MO); valley of Río Guanico, *McPherson* 9237 (MO). **Los Santos–Veraguas Border:** southern Azuero Peninsula, near proposed route of road from El Cortezo to Arenas, Azuero, ca. 10 km SW of El Cortezo, *Hammel* 5412 (MO). **Veraguas:** 18 km W of Las Minas, N slope of Cerro Alto Higo, *Hammel* 4249 (MO); Isla de Coiba, Playa Hermosa, *Cuadros et al.* 8050 (MA, MO); Isla Coiba, distrito de Montijo, Playa Brava, *Galdames et al.* 3244 (MO).

***Sabicea chocoana*** C. M. Taylor, sp. nov. TYPE: Colombia. Antioquia–Chocó border: zona de Urabá, Cerro El Cuchillo, Finca Cidon a la Cumbre, 20–100 m, 9 Oct. 1987, *D. Cárdenas* 584 (holotype, JAUM; isotype, MO-3822736). Figure 1A, B.

Haec species a congeneris inflorescentiae pedunculatae ramosae pedicellis 2–10 mm longis, praeter corollam omnibus partibus vegetativis reproductivisque pubescentia pilosula breve uniformi vestita, lobulis calycinis 1.2–2.2 mm longis atque corolla pubescentia hirsuta patente vestita distinguitur.

Suffrutescent twiners, climbing to 2 m high; stems densely uniformly pilosulous. *Leaves* elliptic-oblong to broadly so, 5.5–11 × 4–8 cm, at apex obtuse to usually gently acuminate, at base cuneate to truncate, drying papyraceous, adaxially moderately strigillose on lamina and densely pilosulous to occasionally hirtellous on costa and secondary veins, abaxially moderately to densely strigillose to usually pilosulous with usually denser and always spreading pubescence on veins; secondary veins 7 to 11 pairs, weakly looping to interconnect, without domatia; *petioles* 3–15 mm long; *stipules* ligulate, 3–4 mm long, obtuse to rounded, persistent, reflexed, adaxially strigillose to glabrescent, abaxially densely pilosulous. *Inflorescences* 2–4 cm long,

densely pilosulous, paniculate with 1 to 2 pairs of secondary axes; peduncles 5–22 mm long; bracts subtending secondary axes narrowly ligulate, 1.5–5 mm long, obtuse to acute, bracts subtending pedicels and flowers narrowly triangular, 0.3–1.5 mm long, acute; pedicels 2–10 mm long; *flowers* with hypanthium ellipsoid, ca. 2 mm long, densely pilosulous; *calyx limb* adaxially strigillose to glabrescent, abaxially densely pilosulous, with tube ca. 1 mm long, lobes 5, ligulate to narrowly so, 1.2–2.2 mm long, obtuse to acute; *corolla* salverform, white, externally densely hirsute, internally not seen, tube 8–9 mm long, lobes 5, narrowly triangular, 2–3 mm long, acute; *anthers* not seen; *style* ca. 6 mm long, stigmas ca. 1.2 mm long; disk annular, ca. 1 mm high. *Fruits* subglobose to ellipsoid, 8–9 mm diam., deep purple to black; seeds angled, ca. 0.3 mm long, finely striate.

*Habitat, distribution, and phenology.* In wet forest at 10–600 m, eastern Panama to northwestern and central western Colombia; collected in flower May through July and in October, in fruit in May, July, and September through November.

This new species is distinguished by the combination of its pedunculate branched inflorescences with pedicels 2–10 mm long; vegetative organs, inflorescence axes, and hypanthia that are pilosulous with uniform spreading trichomes; strongly reflexed calyx lobes 1.2–2.2 mm long; and externally hirsute corollas. The specific epithet refers to its geographic range, which is centered in the Chocó biogeographic region of western Colombia and adjacent eastern Panama. Only one specimen (*Haught* 2210) has mature flowers in condition adequate for study; whether this new species is distylous or homostylous cannot be determined. This new species is similar to the sympatric species *Sabicea panamensis* Wernham; *S. panamensis* differs from *S. chocoana* in its appressed, usually strigose or strigillose pubescence on all parts and its acute calyx lobes 2–6 mm long. This new species is also similar to *S. thyrsiflora* L. Andersson of northwestern Ecuador; *S. thyrsiflora* differs from *S. chocoana* in its appressed to only weakly spreading pubescence, longer stipules (6.5–7 mm long), longer bracts (5–7 mm long), and longer calyx lobes (2.5–2.7 mm long) that are ascending in fruit.

*Paratypes.* COLOMBIA. **Antioquia:** mpio. Turbo, carretera Tapón del Darién, sector Río León-Lomas Aisladas, Km 37, *Brand & González* 680 (JAUM, MO); mpio. Cauca, along road to Nechí ca. 19 km E from Cauca–Planeta Rica road, *Brant & Escobar* 1185 (HUA, MO). **Bolívar:** Palotal, *R. Romero-Castañeda* 1172 (F). **Chocó:** mpio. Riosucio, zona de Urabá, Cerro del Cuchillo, *D. Cárdenas* 787 (JAUM, MO), cerros del Cuchillo, sector



NO, *D. Cárdenas* 254 (JAUM, MO), sector Cuchillo Negro, *D. Cárdenas* 363 (JAUM, MO), camino entre Cuchillo Negro y Punta de las Flores, *D. Cárdenas* 1944 (JAUM, MO), Cuchillo Negro (Río María) a cumbre NO, *D. Cárdenas* 2240 (JAUM, MO); 2–4 km NW of Teresita, *Duke* 11039 (MO), *Duke* 11054 (MO); trail from Río Tigre base camp up Serranía del Darién W of Unguía, *Gentry & Aguirre* 15236 (MO); mpio. de Riosucio, Parque Natural Nacional Los Katyos, Salto de Tilupo, *León* 137 (COL, MO), camino Tilupo, Alto vía Sautatá, desviando por el camino a Tilupo Salto parte baja, *León* 516 (COL, MO). **Santander:** Magdalena valley, Campo Capote, 30 km E of Carare, *Gentry et al.* 20079 (MO); vicinity of Barranca Bermeja (El Centro), *Haught* 2210 (F, MO). PANAMA. **Darién:** 0.5–1.5 mi. E of Manene, *Hartman* 12104 (MO); trail NW of Cana, *Sullivan* 715 (MO).

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